

File 10RD

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Memorandum for Distribution:

FROM: [REDACTED]
APD/CTG/ORD

SUBJECT: Briefing on Optical Disc Recorders [REDACTED]

1 On Tuesday, 8 December, from 9:00 to 11:00 a.m., in room 517 Ames Building, [REDACTED] will speak on high-data-density optical disc recorders using semiconductor lasers. His talk will be based primarily on work [REDACTED] has performed under a recently completed ORD-sponsored contract. [REDACTED]

2. By way of background, we in ORD view optical-disc data recorders as developing along two principal lines during the next decade:

(a) Where extremely large quantities of data are to be recorded per year, say on the order of 10^{15} bits, and where this data must be preserved for more than a few weeks, then total cost will be minimized by using gas lasers in the disc recorders. The reason is that because of the shorter wavelengths available from gas lasers, they can be made to produce smaller spots on the optical discs and thus they can achieve a higher data density in the recording. Therefore fewer blank discs are required and less floor space is needed for the massive data library. Unfortunately, the gas lasers are themselves large and their optical systems are complicated, so that the recorders using gas lasers are forced to be large. Disc recorders using gas lasers tend to take up about as much floor area as an average office desk. That recorder size should

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be of no great disadvantage for such CIA applications as NPIC electronic image storage and for the mass memories for ODP and SAFE.

(b) For applications where keeping the recorder size small is more important than achieving the ultimate in data packing density, then semiconductor lasers will be used. These very small lasers, along with their simpler optics and electronics, will within a few years permit optical disc recorders comparable in size to an office typewriter. We think these small recorders will be especially attractive as replacements for overseas tape recorders, as for example are now used for wide-bandwidth SIGINT collection and for long-duration audio collection.

At this time, the state of the art in gas-laser recorders is significantly better than for semiconductor-laser recorders. ☐

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3. Individuals planning to attend Dr. ☐ talk should advise me at extension ☐

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